

Our Reference: 200300677-1

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellants:	Xiaohe Chen, et al.
Serial Number:	10/775,660
Filing Date:	February 9, 2004
Confirmation No.:	1438
Examiner/Group Art Unit:	Patrick Dennis Niland/1796
Title:	INK COMPOSITIONS FOR INK-JET PRINTING

APPEAL BRIEF

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Sir:

Please enter the following Appeal Brief in the appeal filed February 12, 2010.

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I. REAL PARTY IN INTEREST

The real party in interest is Assignee, Hewlett-Packard Development Company, L.P., a limited partnership established under the laws of the State of Texas and having a principal place of business at 11445 Compaq Center Drive W., Houston, Texas 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

Appellants and the undersigned attorney are not aware of any appeals or any interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-25 are the claims on appeal. See, Appendix.

Claims 1-25 are rejected.

IV. STATUS OF AMENDMENTS

In response to the Final Office Action of November 13, 2009, no amendment pursuant to 37 C.F.R. § 1.116 was filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In this summary of claimed subject matter, all citations are to the specification of United States Patent Application 10/775,660. Further, all citations are illustrative, and support for the cited element may be found elsewhere in the specification.

Independent claim 1:

Independent claim 1 is directed to an ink composition. The ink composition includes from about 0.1 to 5% by weight of only one resin, the only one resin being a water-soluble polyurethane (see page 2, lines 25-28). The water-solubility limit of the water-soluble polyurethane is at least 0.1% at 25°C (see page 4, lines 9-10). The ink composition further includes from about 0.1 to 15% by weight of a 1,2-alkyldiol having 5-9 carbon atoms (see page 8, lines 5-6); from about 0.5 to 6% by weight of a self-dispersed pigment (see page 8, lines 12-14 and lines 24-25); and a balance being water (see page 14).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request review of the following grounds of rejection on appeal:

- 1) Whether claims 1-10 and 13-25 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Yeh, et al. (U.S. Patent Publication No. 2004/0035319, referred to hereinafter as “Yeh”) and Waki, et al. (WO 03/097753 as interpreted by U.S. Patent Publication No. 2004/0242726, referred to herein as “Waki”).
- 2) Whether claims 11 and 12 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Yeh, Waki, and Lu, et al. (U.S. Patent No. 6,102,998, referred to herein as “Lu”).

VII. ARGUMENTS

The arguments presented hereinbelow address the rejections stated in the Final Office Action dated November 13, 2009. It is submitted, however, that the absence of a reply to a specific rejection, issue or comment in the Final Office Action does not signify agreement with or concession of that rejection, issue or comment. Finally, nothing in the following arguments of this appeal brief should be construed as an intent to concede any issue with regard to any claim, except as specifically stated below.

A. Miscellaneous Matters

In the Office Action dated April 17, 2009, claims 1-25 were rejected under 35 U.S.C. § 112, first paragraph, and under 35 U.S.C. § 112, second paragraph. Appellants submitted a reply to such rejections in the Amendment dated July 17, 2009, and in the Final Office Action dated November 13, 2009, the Examiner did not address such rejections or Appellants' reply thereto. However, in a phone conference with Examiner Niland that took place on December 3, 2009, the Examiner stated that all of the 35 U.S.C. § 112 rejections were withdrawn. As such, the 35 U.S.C. § 112 rejections identified in the Office Action dated April 17, 2009 have been overcome and thus are not addressed herein.

B. Rejection of claims 1-10 and 13-25 under 35 U.S.C. § 103(a) over Yeh and Waki

Claims 1-10 and 13-25 stood rejected, in the Final Office Action dated November 13, 2009, under 35 U.S.C. § 103(a) over the Yeh and Waki references. The Examiner asserts that Yeh discloses all of the elements of independent claim 1, except for the claimed amount of polyurethane and that the polyurethane is water-soluble. The Examiner relies on the Waki reference to supply these deficiencies of Yeh, and concludes that the combination of Yeh and Waki renders obvious claim 1, and those claims depending therefrom. Appellants respectfully disagree with the Examiner for the reasons stated below.

The ink composition of independent claim 1 includes “from about 0.1 to 5% by weight of ***only one resin...***” (emphasis added).

Yeh discloses an ink composition that may, in an embodiment, include “binders” (see paragraph [0071] of Yeh). Appellants submit that the pluralized form of the word “binder” infers that the ink composition can include, in that embodiment, ***more than one*** binder. Appellants submit that this is in sharp contrast to the ink composition of Appellants’ claim 1, which includes ***only one resin***.

Further, the only one resin included in the ink composition defined in independent claim 1 is a ***water-soluble*** polyurethane. Yeh discloses that the binders may be polyurethanes (see again paragraph [0071]), however, Yeh does *not* specify whether or not such polyurethanes are water-soluble. Appellants submit that one skilled in the art would *not* assume that the polyurethanes of Yeh are in fact water-soluble given the lack of such disclosure by the reference.

As indicated above, the Examiner turns to the Waki disclosure to supply the deficiencies of Yeh identified above. Waki discloses an aqueous pigment dispersion including a pigment and ***two different resins***: i) a water-soluble resin used as a dispersant, and ii) a resin having an amide bond and/or a urethane bond (e.g., a polyurethane bond). (See abstract and paragraphs [0013], [0034], and [0056] of Waki.) The resin including the amide bond and/or the urethane bond is used as a second resin ***in addition*** to the water-soluble resin (i.e., the first resin) (see paragraph [0056]). In other words, Waki discloses that the pigment dispersion includes ***two*** resins. It is submitted that this is in sharp contrast to the ink composition defined by Applicants’ claim 1, which includes *only one resin*. Furthermore, the teachings of Waki would lead one to include the two different resins (not only one resin) in Yeh’s ink composition.

In the Final Office Action dated November 13, 2009, the Examiner also states that Waki discloses that water-soluble polyurethanes are present in the ink composition, and that such polyurethanes are present in Appellants’ claimed amounts. The Examiner also states that Waki teaches that water-soluble polyurethanes are useful as binders for an inkjet ink (citing paragraphs [0056] – [0066]). Appellants respectfully

disagree with the Examiner, and submit that paragraphs [0056] – [0066] of Waki set forth examples of the resin including an amide bond and/or a urethane bond (not the water soluble resin). Waki does *not* disclose that any of these examples are in fact water-soluble. At most, Waki discloses in paragraph [0056] that “[t]he present invention further employs a resin having an amide bond and/or a urethane bond **as a second resin in addition to** the above-mentioned water-soluble resins” (emphasis added). Examples of the water-soluble resin (i.e., *not* the resin including an amide bond and/or a urethane bond) are set forth in paragraph [0046] of Waki. Appellants submit that *none* of the examples of the water-soluble resins disclosed in paragraph [0046] of Waki are polyurethanes.

For all of the reasons stated above, Appellants submit that the combination of Yeh and Waki *fails* to disclose an ink composition including only one resin, where the only one resin is a water-soluble polyurethane. Thus, it is submitted that such combination of references does *not* render obvious independent claim 1, or those claims depending therefrom.

C. Rejection of claims 11 and 12 under 35 U.S.C. § 103(a) over Yeh, Waki, and lu

Claims 11 and 12 stood rejected, in the Final Office Action dated November 13, 2009, under 35 U.S.C. § 103(a) as being unpatentable over Yeh, Waki, and lu. For all of the reasons stated above, Appellants submit that the combination of Yeh and Waki *fails* to render obvious independent claim 1, from which claims 11 and 12 depend. Appellants further submit that lu *fails* to supply the deficiencies of Yeh and Waki. As such, it is also submitted that the combination of Yeh, Waki, and lu fails to render obvious independent claim 1, as well as claims 11 and 12 which depend therefrom. It is further submitted that Appellants’ invention as defined in claims 11 and 12 is not anticipated, taught, or rendered obvious by Yeh, Waki, and lu, either alone or in combination, and patentably defines over the art of record.

VIII. CONCLUSION

The Appellants respectfully submit that claims 1-25 as currently pending fully satisfy the requirements of 35 U.S.C. §§ 102, 103 and 112. Accordingly, Appellants respectfully request that the Board of Patent Appeals and Interferences find for the Appellants and reverse the rejection of each of Appellants' claims 1-10 and 13-25 under 35 U.S.C. § 103(a) as being obvious over Yeh and Waki, and claims 11 and 12 under 35 U.S.C. § 103(a) as being obvious over Yeh, Waki, and lu. In view of the foregoing, favorable consideration and passage to issue of the present application is respectfully requested.

Respectfully submitted,

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JCD/AMS/JRK

IX. CLAIMS APPENDIX

1. (Previously presented) An ink composition, comprising:

from about 0.1 to 5% by weight of only one resin, the only one resin being a water-soluble polyurethane, wherein the water-solubility limit of the water-soluble polyurethane is at least 0.1% at 25°C;

from about 0.1 to 15% by weight of a 1,2-alkyldiol having 5-9 carbon atoms;

from about 0.5 to 6% by weight of a self-dispersed pigment; and

a balance being water.

2. (Previously presented) The ink composition of claim 1 wherein the self-dispersed pigment is present at a concentration in the range of about 2 to 4% by weight, the water-soluble polyurethane is present at a concentration in the range of about 0.5 to 3% by weight and the 1,2-alkyldiol is present at a concentration in the range of about 1 to 8% by weight.

3. (Original) The ink composition of claim 1 wherein the water-solubility limit of the water-soluble polyurethane is greater than about 5% at 25°C.

4. (Original) The ink composition of claim 1 wherein the water-soluble polyurethane has a weight average molecular weight of less than about 15,000 Da.

5. (Original) The ink composition of claim 1 wherein the water-soluble polyurethane has an acid number in the range of about 30 to 70.

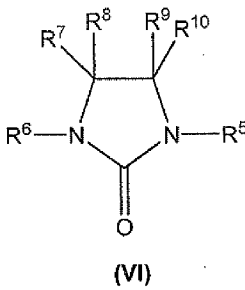
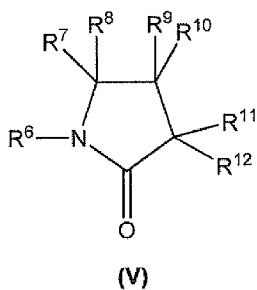
6. (Original) The ink composition of claim 1 wherein the 1,2-alkyldiol is 1,2-pentanediol.

7. (Original) The ink composition of claim 1 wherein the 1,2-alkyldiol is 1,2-hexanediol.

8. (Previously presented) The ink composition of claim 1, further comprising a water-miscible organic co-solvent or a mixture of water-miscible organic co-solvents.

9. (Original) The ink composition of claim 8 wherein the water-miscible organic co-solvent or mixture of water-miscible organic co-solvents is present at a concentration in the range of about 0.5 to 20%.

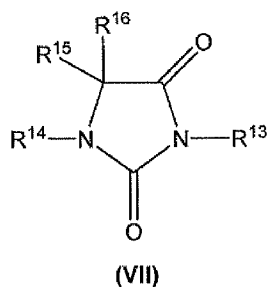
10. (Original) The ink composition of claim 8 wherein the water-miscible organic co-solvent is a 2-pyrrolidone derivative having formula (V) or an imidazolidinone derivative having formula (VI):



wherein R^5 , R^6 , R^7 , R^8 , R^9 , R^{10} , R^{11} and R^{12} are each independently selected from the group consisting of hydrogen and C_1 - C_6 aliphatic groups; and

wherein any C_1 - C_6 aliphatic groups are optionally substituted with one or more hydroxyl groups.

11. (Original) The ink composition of claim 8 wherein the water-miscible organic co-solvent is a hydantoin derivative having formula (VII):



wherein R^{13} , R^{14} , R^{15} and R^{16} are each independently selected from the group consisting of hydrogen and C_1 - C_6 aliphatic groups; and

wherein any C_1 - C_6 aliphatic groups are optionally substituted with one or more hydroxyl groups.

12. (Original) The ink composition of claim 8 wherein the mixture of water-miscible organic co-solvents comprises a mixture of 2-pyrrolidone and di-(2-hydroxyethyl)-5,5-dimethylhydantoin.

13. (Original) The ink composition of claim 1 having a viscosity in the range of about 1.5 to 6 cps and a surface tension in the range of about 18 to 45 dynes/cm.

14. (Original) The ink composition of claim 1 having a viscosity in the range of about 2 to 3.4 cps and a surface tension in the range of about 21 to 37 dynes/cm.

15. (Original) The ink composition of claim 1 having a pH in the range of about 8 to 10.

16. (Original) The ink composition of claim 1 having a pH in the range of about 8.5 to 9.5.

17. (Original) The ink composition of claim 1 with the proviso that no surfactant is present in the ink composition.

18. (Original) A process for printing an image on a print medium comprising applying thereto an ink according to claim 1, by means of an ink-jet printer.

19. (Original) The process of claim 18 wherein the print medium is a plain paper or a coated paper.

20. (Original) An ink-jet printer cartridge containing an ink according to claim 1.

21. (Previously presented) The ink composition of claim 1 wherein the water-solubility limit of the water-soluble polyurethane is at least 10% at 25°C.

22. (Previously presented) The ink composition of claim 1 wherein the water-soluble polyurethane has a weight average molecular weight in the range of about 4,000 to 10,000 Da.

23. (Previously presented) The ink composition of claim 1 wherein the water-soluble polyurethane has a weight average molecular weight in the range of about 4,000 to 7,000 Da.

24. (Previously presented) The ink composition of claim 1 wherein the water-soluble polyurethane has an acid number in the range of about 40 to 60.

25. (Previously presented) The ink composition of claim 1 wherein the 1, 2-alkyldiol is present in an amount ranging from about 1% to about 4% by weight.

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X. EVIDENCE APPENDIX

None.

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XI. RELATED PROCEEDINGS APPENDIX

None.